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35 Section 21

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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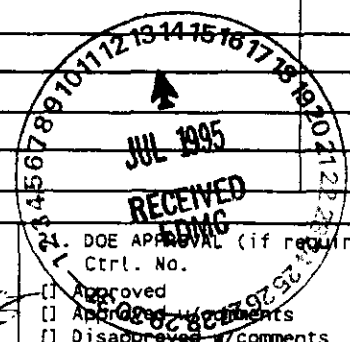

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7. Abstract

This report summarizes the sampling activities undertaken and the analytical results obtained in a soil sampling and analyses study performed for the 218 E-8 Borrow Pit Demolition Site (218 E-8 Demolition Site). The 218 E-8 Demolition Site is identified as a Resource Conservation and Recovery Act (RCRA) treatment unit that will be closed in accordance with the applicable laws and requlations.

No constituents of concern were found in concentrations indicating contamination of the soil by 218 E-8 Demolition Site activities.

8. RELEASE STAMP

CONTENTS

FIGURES

TABLES

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218 E-8 BORROW PIT DEMOLITION SITE CLEAN CLOSURE SOIL EVALUATION REPORT

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this report is to describe the soil sampling performed at the 218 E-8 Borrow Pit Demolition Site (218 E-8 Demolition Site) and to present the analytical results of the verified soil samples and compare these results to clean closure criteria.

The scope of this report is the evaluation of the analyte concentrations for the nine samples taken to represent the unit soil. This report does not describe analytical methodology, nor does it provide raw analytical data or the sampling validation report. A description of the sampling plan is presented in the 218 E-8 Demolition Site closure plan (DOE-RL 1994a). The sampling plan was discussed and agreed to by all parties during the Data Quality Objective (DQO) meeting held May 24, 1994. All analytical data were validated according to *Data Validation Procedures for Chemical Analysis* (WHC 1993). The laboratory data package and data validation report have been transmitted to Ecology as the regulatory lead for closure of this unit (DOE-RL 1994c).

The 218 E-8 Demolition Site is a *Resource Conservation and Recovery Act* (RCRA) *of 1976* treatment unit located in the 200 East Area of the Hanford Site. A single demolition event in November 1984 occurred at the 218 E-8 Demolition Site. This demolition event was a form of thermal treatment for discarded explosive chemical products. Because it will no longer be used for this thermal activity, the unit will be closed. Soil sampling of the 218 E-8 Demolition Site for the purposes of clean closure occurred in July 1994 in accordance with the 218 E-8 Demolition Site Closure Plan, Revision 1 (DOE-RL 1994a).

1.2 SUMMARY OF RESULTS

To meet the criteria for clean closure of the 218 E-8 Demolition Site, analytical results must verify that the concentration of all detonation activity residues is at or below action levels. Action levels are defined as levels above the Hanford Site soil background threshold levels identified in *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes* (DOE-RL 1994b) and the Model Toxics Control Act (MTCA) (WAC 173-340) Method B residential levels. No constituents of concern were found in concentrations indicating contamination of the soil at the 218 E-8 Demolition Site (i.e., concentrations above action levels).

Regulator acceptance of the findings presented in this report will qualify the treatment unit for clean closure in accordance with *Washington*

Administrative Code (WAC) 173-303-610, "Dangerous Waste Regulations," without further sampling or soil removal and/or decontamination.

1.3 TREATMENT UNIT INFORMATION

The 218 E-8 Demolition Site closure area is located in the northeast portion of the 200 East Area, as shown in Figure 1. The closure area occupies an area 20 feet (6 meters) by 20 feet (6 meters) square. It is located within a multi-use borrow pit area, as shown in Figure 2. The entire multi-use borrow pit area is approximately 600 feet (180 meters) by 900 feet (270 meters) in size with a gravelly, sparsely vegetated landscape.

In November 1984, a demolition event consisting of a single explosion occurred at the 218 E-8 Demolition Site. Discarded explosive chemical products (DOE-RL 1994a) were placed in a shallow depression, 6 to 12 inches (15 to 30 centimeters) deep, dug expressly for the demolition activity. The discarded explosive chemical products were detonated in their original metal and glass containers. Conventional explosives (i.e., nitroglycerin dynamite and detonating cord) were placed around and on top of the chemical containers. After the detonation event, the area was inspected to confirm that no intact chemicals or containers remained.

2.0 SAMPLING

Soil sampling was performed on July 12, 1994, as specified in the sampling and analysis plan (SAP) provided in the 218 E-8 Demolition Site Closure Plan (DOE-RL 1994a). Nine samples were collected (8 samples and 1 collocated duplicate). Two blank samples were included during sampling: a trip blank and an equipment blank. The trip blank is used to test for contamination due to sample handling. The equipment blank is used to determine whether decontamination of sampling equipment is adequate.

2.1 SAMPLE LOCATIONS

The sample locations and the intervals are shown in Figure 3. The nine soil samples were taken within a 5.5-foot (1.7-meter)-radius centered around the blasting pit. Before sampling, the blasting pit was reconstructed by removing wind-blown sand to create a 6-inch (15 centimeter)-deep, 3-foot (91-centimeter) diameter hole (original diameter 1.5 feet [46 centimeters]). Sample intervals within the reconstructed crater (Figure 3, shaded area) were based on the configuration of the reconstructed crater. All nine sample locations were authoritatively selected to ensure comprehensive coverage in the inner radius of the pit and to account for the effects of prevailing wind patterns on the pit. The collocated duplicate sample was taken at the center of the crater at an interval of 0 to 6 inches (0 to 15 centimeters).

2.2 SAMPLE COLLECTION

The nine samples required by the closure plan were assigned Hanford Environmental Information System (HEIS) (WHC 1990) numbers BOCBN1, BOCBN2, and BOC961 through BOC969 (Figure 3). The trip blank sample was numbered BOCBN2 and the equipment blank sample was numbered BOC964.

Engineering support personnel used hand tools (i.e., stainless steel spoon and bowl) to obtain the soil samples in accordance with information provided in Figure 3. Sampling depth ranged from 0 to 18 inches (0 to 46 centimeters). Samples were collected for offsite laboratory analyses per SW-846 as requested on the Sample Analysis Form 94-329 (Figure 4). The sampling equipment was decontaminated in the 1706 KE Laboratory in accordance with Environmental Investigation Instruction 5.5, "Laboratory Cleaning of RCRA/CERCLA Sampling Equipment" (WHC 1988). A complete set of decontaminated equipment was provided for each sample. All sampling equipment was later returned to the 1706 KE Laboratory for decontamination.

Because samples going offsite are required to show a certificate of nondangerous radioactivity, additional aliquots were taken for total activity readings. These aliquots were transported to the 222-S Laboratory on the following day, July 13, 1994. The evaluation of the total activity results allowed release of the samples for offsite transfer on July 14, 1994. All samples were packaged, handled, and shipped in accordance with WHC Environmental Investigations Instructions (WHC 1988). All samples were cooled to 4 °Celsius during storage and transportation to the offsite laboratory. Samples are listed in Table 1.

2.3 QUALITY CONTROL SAMPLES

Figure 3 summarizes sample identification, location, and QC designation.

A duplicate sample (BOC953) was taken at the location of sample BOC952. The sample number BOC952 and the collocated duplicate were taken from the center of the crater at an interval of 0 to 6 inches (0 to 15 centimeters). Duplicate samples are collected as close as possible to the same point in space and time; however, they are stored in separate containers and analyzed independently. Duplicates are used to estimate the precision of the sampling process.

Trip blanks are used when samples are taken for volatile organics analysis. The trip blank for this study consisted of clean sand that was placed in a sample bottle in an uncontaminated area. The trip blank was subjected to the same handling as the routine samples and was analyzed to determine if contamination originated from the sample container or transportation and storage procedures. The trip blank was submitted to the analytical laboratory with the routine samples.

Equipment blanks consist of clean sand poured over or through the sampling device after decontamination; these blanks are collected in a sample bottle and transported to the laboratory for analysis. Equipment blanks test

for residual contamination from inadequate decontamination of the sampling equipment at the 1706 KE Facility. One equipment blank was collected after the sampling event was completed.

3.0 PERFORMANCE STANDARDS

The performance standards, or action levels, for soils are defined in the 218 E-8 Demolition Site closure plan (DOE-RL 1994a), Chapter 6, Section 6.1. To meet action levels for clean closure, analytical results must verify that potentially dangerous waste constituents treated at the unit are not present in concentrations above these levels. Action levels are defined as levels above the Hanford Site soil background threshold levels identified in *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes* (DOE-RL 1994b) and *Model Toxics Control Act* (MTCA) (WAC 173-340) Method B levels. If analysis determines that concentration are above both guidelines, a phase two investigation will be developed. Additional information on the Hanford Site Background threshold levels is provided in Section 3.1 and is listed in Tables 2 and 3. Information on MTCA Method B health-based levels is provided in Section 3.2 and calculations are described in *Model Toxics Control Act* (MTCA) [WAC 173-340-740 (3)(a)(iii)] Method B. In this report, the analytical results have been evaluated and compared with action levels to verify that the concentration of all detonation activity residues is at or below action levels.

3.1 BACKGROUND LEVELS

The background action levels used in this report are based on a sitewide approach to determining background levels and were developed as an alternative to local unit-based background determinations at the Hanford Site (DOE-RL 1994b). Using local background for each treatment, storage, and/or disposal (TSD) unit can lead to different definitions of contamination and different assessments of remediation goals and risk for various TSD units. The Hanford Site Background approach is based on the premise that (1) the waste management units are located on or in a common sequence of vadose zone sediments, and (2) the basic characteristics that control the chemical composition of these sediments are similar throughout the Hanford Site. The range of natural soil compositions is used to establish a single set of soil background data. Use of the Hanford Site Background for environmental restoration on the Hanford Site is technically preferable to the use of the unit-based background because the former more accurately represents the natural variability in soil composition and also provides a more consistent and efficient basis for evaluating contamination in soil.

The Hanford Site Background threshold levels are summarized in Tables 2 and 3. The background threshold is the concentration level defining the upper limit of the background population. Background thresholds are based on a tolerance interval approach. The calculated threshold levels depend on the confidence interval and percentile used in the calculation. The

WAC 173-340-708(11)(d) specifies a tolerance coefficient of 95 percent and a coverage of 95 percent. The Hanford Site Background threshold levels are based on this 95/95 confidence interval. Statistical calculations are described in the source document (DOE-RL 1994b).

3.2 HEALTH-BASED LEVELS

The health-based action levels used in this report are based on calculations from the equations, risk levels, and exposure assumptions found in the MTCA Method B [WAC 173-340-740 (3)(a)(iii)]. For noncarcinogens, the principal variable is the reference dose. The reference dose, as defined in the Environmental Protection Agency's (EPA) *Integrated Risk Information System* (IRIS) database (EPA 1995), is an estimate of a daily exposure to the human population that likely is to be without an appreciable risk of deleterious effects during a lifetime. For carcinogens, the cancer slope factor is the basis for determining human health effects; it is a measurement of the risk per unit dose. The reference dose and the cancer slope factor are chemical-specific and are obtained from IRIS. If not available in IRIS, secondary sources for these toxicity values include the Ecology Cleanup Levels and Risk Calculation database (Ecology 1995) and EPA Health Effects Assessment Summary Tables (EPA 1994).

4.0 ANALYSES

All samples were analyzed for volatile organic compounds (VOC), detonation residues, anions, and total nitrogen. Semi-volatile organic compound (Semi-VOC) analysis was performed on selected samples (Figure 3). Semi-VOCs are not part of the inventory of known discarded explosive chemical products that were detonated at the 218 E-8 Demolition Site, nor are they listed on the inventory of known detonation materials used at the 218 E-8 Demolition Site. However, during the DQO meeting, all parties agreed to analyze a limited number of samples for semi-VOC for informational purposes.

All samples were sent to IT-Quanterra Laboratory in Knoxville, Tennessee, for analysis. Table 1 lists the analytical methods for 218 E-8 Demolition Site soils. Anions and total nitrogen results are grouped together in the data package "General Chemistry" and will be discussed in this report under the subtitle of "Inorganic Compounds." Each analyte group, except nitroexplosives and VOCs, has a concentration comparison table that lists and identifies chemical concentrations (see Tables 2 and 3). All known nitroexplosives and VOCs data were reported as undetected. No further evaluation will be presented for these undetected analytes.

All analytical data were validated according to *Data Validation Procedures for Chemical Analysis* (WHC 1993) (refer to Section 5.0).

4.1 ORGANIC ANALYSES

Samples were analyzed for VOCs and semi-VOCs, including standard target analytes and Appendix IX VOCs and semi-VOCs, using gas chromatography/mass spectroscopy (GS/MS), which is based on EPA SW-846 methods 8240 and 8270. Any unidentified compounds were subjected to a computer-generated library search and mass spectral interpretation. Those unidentified analytes that generally correlate with known compound spectra are listed as tentatively identified compounds (TICs). The volatile organic analysis was performed by purge and trap with capillary column on a GC/MS. All samples were analyzed and all analytes were reported as undetected. Matrix spike and matrix duplicate samples were analyzed for sample BOC961 and met all QC method specified limits.

The semi-VOC analysis was performed by direct injection of sample extract on a capillary column on a GC/MS. The samples did not contain any Appendix IX compounds. Matrix spike and matrix spike duplicate were analyzed for sample BOC961 and passed all QC criteria.

4.2 INORGANIC ANALYSES

Samples were analyzed for the following inorganic analytes: fluoride, chloride, phosphate, sulfate, nitrate, and nitrite. The EPA Method 300 (EPA 1993) was used to determine the fluoride, chloride, phosphate, and sulfate concentrations. The EPA Method 353.2 (EPA 1993) was used to determine the nitrate/nitrite concentrations. It should be noted that EPA Method 300 (EPA 1993) reports values for nitrate and nitrite and these are included in the validation data package (DOE-RL 1994c). However, for the purpose of this report, only the results from Method 353.2 (EPA 1993) will be used as agreed to during the DQO process.

5.0 DATA VALIDATION

Data validation was performed by Golder Associates Inc. (GAI), in accordance with Level D as defined in *Data Validation Procedures for Chemical Analysis* (WHC 1993). Level D validation includes evaluation and qualification of results based on analytical holding times, method blank results, matrix spikes and duplicates, surrogate recoveries, and analytical method blanks.

The criteria and limits for the validation procedures are listed in the source document. Results of the data validators' review of the QC applied in this sampling event were transmitted to the regulators with the validated data packages (DOE-RL 1994c).

The data validation procedure establishes the following qualifiers and definitions to describe the associated data:

U Indicates the compound or analyte was analyzed for and not detected in the sample.

UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Because of a quality control deficiency identified during data validation, the associated quantitation limit is an estimate. These data are useable for decision-making purposes.

J Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate by the laboratory because it is below the method detection limit. These data are usable for decision-making purposes.

JN Indicates a tentatively identified compounds (TIC) that has been determined to be valid in terms of identification and quantitation.

UR Indicates the compound or analyte was analyzed for and not detected in the sample. As a result of a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision-making purposes.

R Indicates the compound or analyte was analyzed for and detected. As a result of a major quality control deficiency identified during data validation, the concentration reported has been qualified as unusable. The associated data should be considered unusable for decision-making purposes.

B For organic data, indicates that the analyte was detected in both the sample and the associated blank. For inorganic data, indicates that the analyte concentration is less than the contract required detection limit, but greater than the instrument detection limits.

All TICs reported during the organics analyses are deemed as estimated and presumptive and are qualified as estimated during the data validation process (WHC 1993).

Some discrepancies were noted in the validation of the laboratory data resulting in the data being qualified. The qualifiers are listed in Tables 2 and 3. The following qualifiers were applied to the data as described and required in the data validation guidelines (WHC 1993):

- For the volatile organic analysis (VOA), methylene chloride and acetone were detected in the laboratory blank. This resulted in some data being qualified as non-detect (U).

- For general chemistry analyses (anions), the holding times for some phosphate results were exceeded and the applicable results were qualified as estimated (J) or rejected (R). However, this is due to applying holding times established for water samples to these soil samples. There are currently no holding times established for soil samples.

- For chloride, sample spike recovery was slightly below control limits and the applicable results were qualified as estimated (J).

- No deficiencies were noted for the semi-VOA and nitroexplosives data.

Additional information on the above noted laboratory discrepancies can be found in the data validation packages (DOE-RL 1994c).

6.0 DATA EVALUATION

The closure plan proposed comparing concentrations in soil of constituents of concern to health-based action levels. Analytical results below the detection limits are not considered to signify contamination. The samples will be considered clean with respect to that analyte. The health-based action levels will be based on MTCA Method B or Hanford Site Background threshold levels for soil. Any analyte found in concentrations greater than this health-based level will require further evaluation.

6.1 ORGANICS

No VOCs were reported. For the semi-volatiles analyses, discussed below, all of the compounds found can be dismissed due to their low concentrations or their status as common laboratory contaminants.

Phthalate compounds were identified in two samples including the equipment blank (B0C962, B0C964). According to data validation guidelines, these are common laboratory contaminants when detected in concentrations less than 4,000 parts per billion in soil samples. Because all values were below this limit, all phthalate compounds are being dismissed as attributable to laboratory contaminants.

There are no Hanford Site Background threshold levels or MTCA, Method B levels or practical quantitative level (PQL) for TICs. TICs are purely a qualitative measure of whether or not a compound is detected, the result is strictly estimated. The TICs found in this study are not an EPA listed hazardous substance (40 CFR 261) nor are they WAC dangerous waste constituents having a waste designation level (WAC 173-303). No toxicity (oral reference dose) information or carcinogenicity (cancer potency factor) information is available from the EPA. Because TICs have no established action levels or bearing on dangerous waste regulations and are present at such low concentration levels, they are considered to be below a level of concern.

The field duplicate sample B0C962 contained TICs (identified in Table 2) that were not found in the original sample (number B0C961). No constituents, except a phthalate, were detected in the duplicate. Compounds not found in both the original and duplicate samples do not show reproducibility and, therefore, are dismissed as anomalies.

TICs identified as hexanoic acid, hexadecanoic acid, and 2-methoxy-2-propoxy propane were found in the equipment blank in low concentrations and can be attributed to, and dismissed as, equipment contamination.

In sample number BOC963, one TIC was identified as pentacosane at 260 parts per billion. Pentacosane is a long single chain hydrocarbon categorized as a wax bi-product. It is not subject to the dangerous waste regulations and is present at such low concentration levels that it is considered to be below a level of concern.

A TIC identified as 2,6-dimethyl-heptadecane was detected in sample numbers BOC961, BOC962, and BOC963 in the 100 parts per billions range. The 2,6-dimethyl-heptadecane is not subject to the dangerous waste regulations and is present at such low concentration levels that it is considered to be below a level of concern.

6.2 INORGANICS

No nitroexplosives were reported. The anions analyses are summarized in Table 3. Chloride and phosphate results that were qualified with a J indicate that the data are estimated but considered usable for decision-making purposes through data validation. Anion analyses reported above the laboratory instrumentation detection limits were compared to MTCA, Method B and/or Hanford Site Background threshold levels (DOE-RL 1994b). Fluoride, chloride, phosphate, sulfate, and nitrite-nitrate concentrations were all found to be below action levels indicating no contamination present. Chloride and sulfate were detected in the equipment blank indicating that the source was from the sampling equipment.

7.0 CONCLUSIONS

The sampling and analysis activities identified few analyte concentrations above detection. No volatile organic compounds or nitroexplosives were detected. When MTCA, Method B and Hanford Site Background threshold levels were available, all analytes were below action levels. Of the semi-VOCs for which no action levels were available, all were TICs whose concentrations were below quantitation limits. The semi-VOC detections were dismissed for any one of the following reasons:

- low concentrations
- attributed to common laboratory contaminates
- contamination by equipment
- constituents were not hazardous substances or dangerous waste constituents.

All inorganic concentrations are below MTCA, Method B and/or Hanford Site Background threshold levels, indicating no inorganic contamination is present at the 218 E-8 Demolition Site.

In summary, the analytical results for the 218 E-8 Demolition Site soils meet the criteria for clean closure verifying that the concentration of all detonation activity residues are below action levels. No constituents of concern were found in concentrations indicating contamination of the soil at the 218 E-8 Demolition Site (i.e., concentrations above action levels). Consequently, under the provisions of WAC 173-303-610, this RCRA unit qualifies for clean closure.

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40 CFR 261, "Identification and Listing of Hazardous Waste," *Code of Federal Regulations*, as amended.

40 CFR 262, "Standards Applicable to Generators of Hazardous Waste," *Code of Federal Regulations*, as amended.

40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste," *Code of Federal Regulations*, as amended.

40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.

40 CFR 264, Subpart F (Sections 90 through 101), 1992 "Releases from Solid Waste Management Units," *Code of Federal Regulations*, as amended.

40 CFR 264, Subpart X (Sections 600 through 603), "Miscellaneous Units," *Code of Federal Regulations*, as amended.

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.

40 CFR 266, "Standards for the Management of Specific Hazardous Wastes and Specific Hazardous Waste Management Facilities," *Code of Federal Regulations*, as amended.

40 CFR 267, "Interim Standards for Owners and Operators of New Hazardous Waste Land Disposal Facilities," *Code of Federal Regulations*, as amended.

40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations*, as amended.

40 CFR 270, "EPA Administered Permit Programs: The Hazardous Waste Permit Program," *Code of Federal Regulations*, as amended.

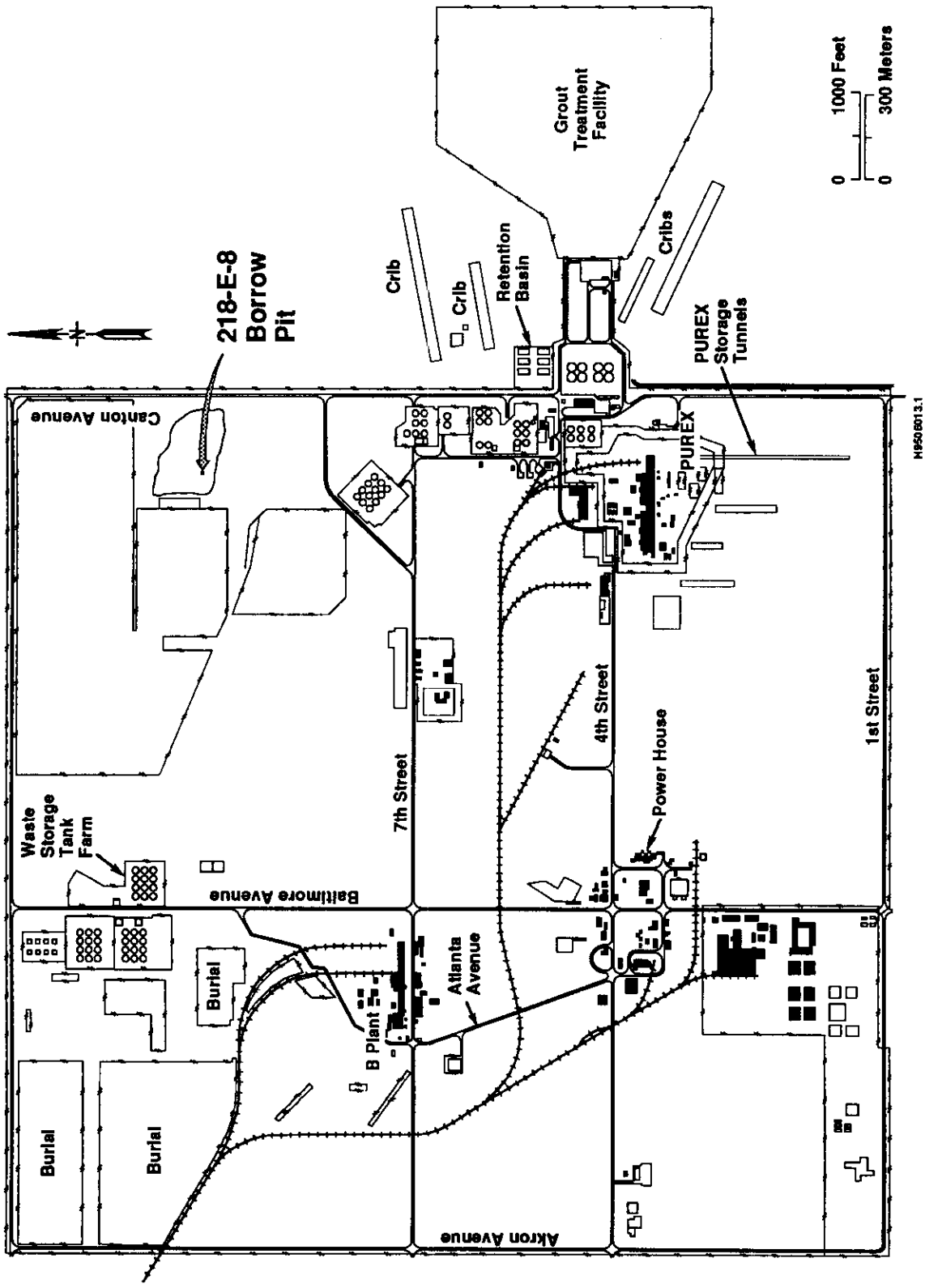

Figure 1. 200 East Area.

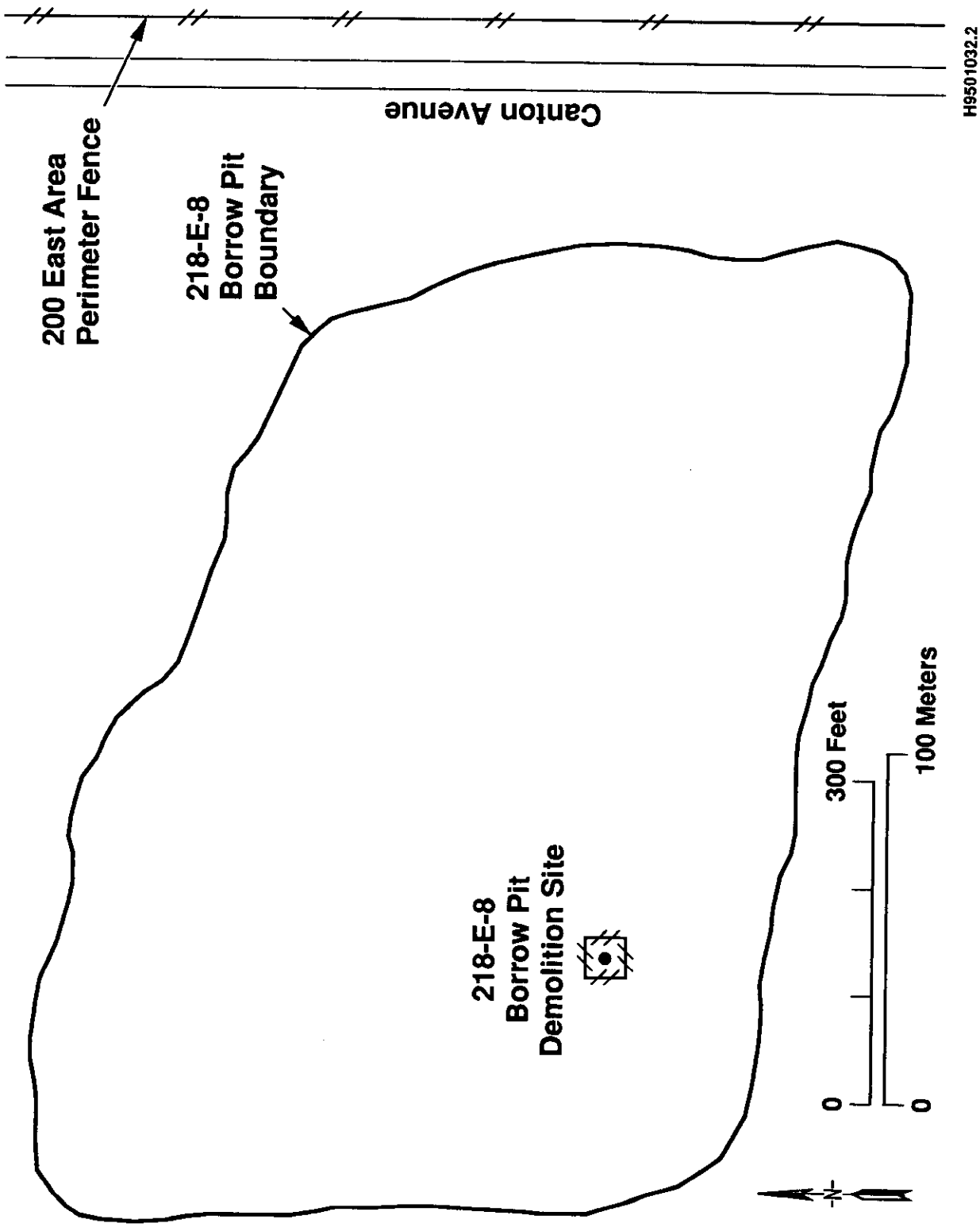

Figure 2. Layout of 218 E-8 Demolition Site Closure Area.

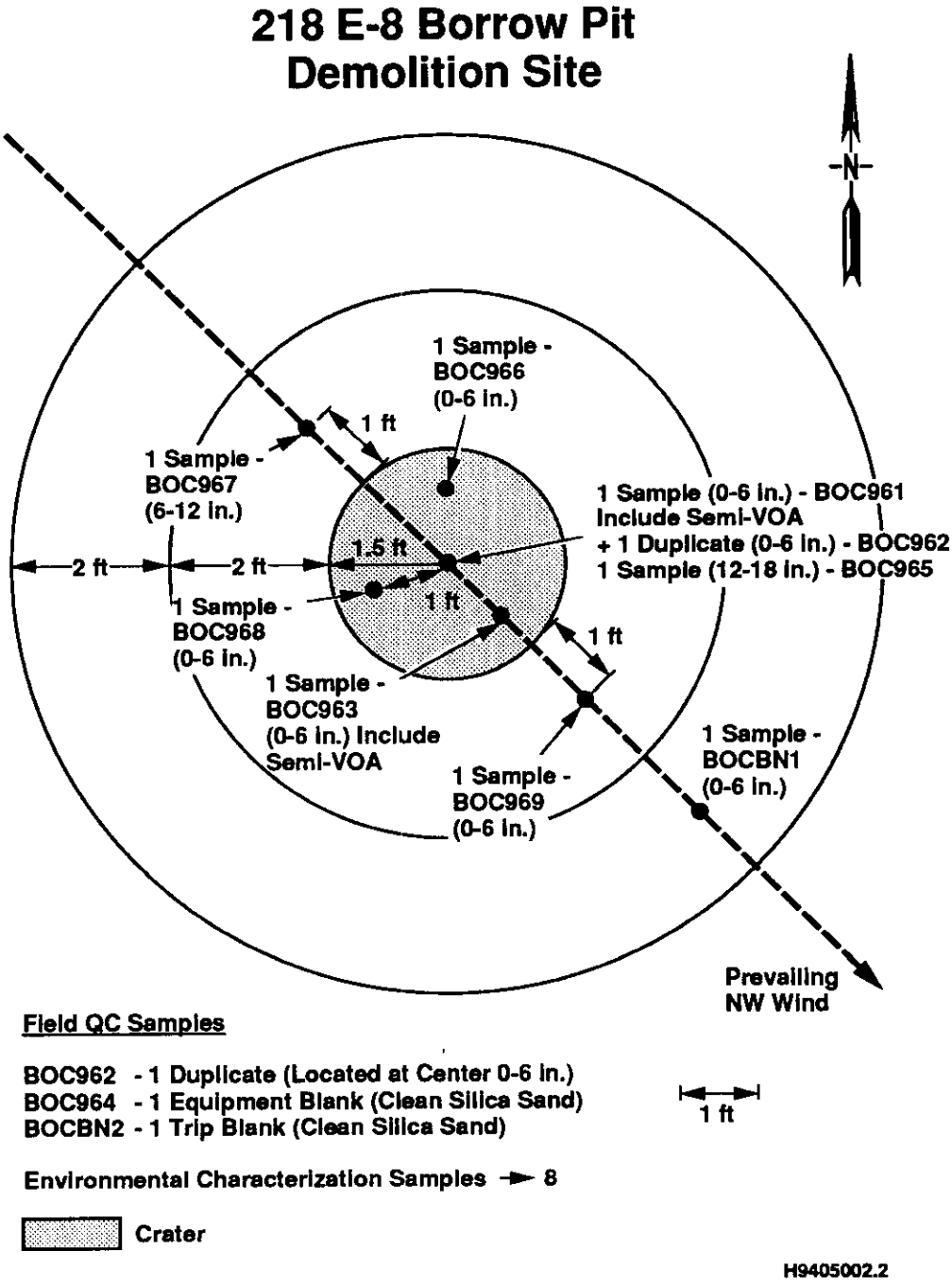

Figure 3. 218 E-8 Demolition Site Closure Area, Sampling Locations, and Sample Intervals.

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

Requirements are for IT

REV 0 06/27/94

94-329
SAF Number

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1. VOA	8240 Appendix IX	Gs* 125 mℓ	Cool 4°C	7 Days
2. Semi-VOA	8270 Appendix IX	aG 125 mℓ	Cool 4°C	14 Days[2]
3. Detonation Residue	8330	aG 125 mℓ	Cool 4°C	14 Days[2]
4. Anions - F, Cl, SO_4 - PO_4, NO_2, NO_3	EPA 300.0	G 125 mℓ	Cool 4°C	 28 Days 48 Hours
5. NO_2 - NO_3	EPA 353.1	P/G 125 mℓ	Cool 4°C	28 Days
6. ICP Metals AA Metals - Arsenic - Lead - Selenium - Mercury	6010 7060 7421 7740 7471	G 125 mℓ	Cool 4°C	6 Months 6 Months 6 Months 6 Months 28 Days
7. Activity Scan (IT)	Lab Specific	G/P 40 mℓ	Cool 4°C	ASAP
8. Rod Screen (222-S)	Lab Specific	G/P small vial (at least 1 g)	None	ASAP

[1] Container Types:

P = Plastic (Polyethylene)
G = Glass
Gs = Glass w/septum cap
Gw = Glass/wide mouth jar
Gs* = Glass w/septum cap--
No head space in container
Pw = Plastic (Polyethylene)/wide mouth jar
PP = Polypropylene
aG = Amber Glass
T = Fluorocarbon Resins
aGs = Amber Glass w/septum cap
aGs* = Amber Glass w/septum cap
No head space in container

[2] 7 Days for Extraction, 40 Days for Analysis

[3] 14 Days for Extraction, 40 Days for Analysis

Figure 4. Sample Analyses Form 94-329.

Table 1. Routine and Quality Control Samples.

Sample number	Constituent Analysis[a]	Analytical Method
BOC961	VOC, Semi-VOC, Detonation residue, Anions, TN	SW-846:8240, 8270, 8330[b] EPA 300.0, 353[c]
BOC962 Duplicate	VOC, Semi-VOC, Detonation residue, Anions, TN	SW-846:8240, 8270, 8330 EPA 300.0, 353
BOC963	VOC, Semi-VOC, Detonation residue, Anions, TN	SW-846:8240, 8270, 8330 EPA 300.0, 353
BOC964 Equipment Blank	VOC, Semi-VOC, Detonation residue, Anions, TN	SW-846:8240, 8270, 8330 EPA 300.0, 353
BOC965	VOC, Detonation residue, Anions, TN	SW-846:8240, 8330 EPA 300.0, 353
BOC966	VOC, Detonation residue, Anions, TN	SW-846:8240, 8330 EPA 300.0, 353
BOC967	VOC, Detonation residue, Anions, TN	SW-846:8240, 8330 EPA 300.0, 353
BOC968	VOC, Detonation residue, Anions, TN	SW-846:8240, 8330 EPA 300.0, 353
BOC969	VOC, Detonation residue, Anions, TN	SW-846:8240, 8330 EPA 300.0, 353
BOCBN1	VOC, Detonation residue, Anions, TN	SW-846:8240, 8330 EPA 300.0, 353
BOCBN2 Trip Blank	VOC	SW-846:8240

NOTE: All samples submitted to IT-Quanterra, Knoxville, Tenn.

TN = nitrate-nitrite

[a] Sample locations and analytical requirements in Figure 3 and 4.

[b] EPA 1986.

[c] EPA 1993.

Table 2. 218 E-8 Demolition Site Results, Semi-Volatile Organics Analysis.

Sample number	Name of Constituent	CAS[a]	Qualifiers	Concentration µg/kg	MTCA Method B Cleanup Level[b] µg/kg	Hanford Site Soil Background 95/95 threshold µg/kg	Hanford Site Background Maximum Conc. µg/kg
B0C961	TIC:						
	2,6,-Dimethyl-Heptadecane	54105-67-8	JN	140.00	NA	NA	NA
B0C962	Di-N-Butylphthalate	84-74-2	J	100.00	8000.0	NA	NA
Duplicate	TIC:						
	2,6,-Dimethyl-Heptadecane	54105-67-8	JN	92.0	NA	NA	NA
	Hexadecanoic Acid	57-10-3	JN	130.0	NA	NA	NA
	4,7-Dimethylundecane	17301-32-5	JN	78.00	NA	NA	NA
	Pentadecane	629-62-9	JN	75.00	NA	NA	NA
	Octacosane	630-02-4	JN	220.0	NA	NA	NA
B0C963	TIC:						
	2,6,-Dimethyl-Heptadecane	54105-67-8	JN	87.00	NA	NA	NA
	Pentacosane	629-99-2	JN	260.0	NA	NA	NA
B0C964	Di-N-Butylphthalate	84-74-2	J	78.0	8000.0	NA	NA
equip	Bis(2-ethylhexly)phthalate	117-81-7	BJ	61.0	71.0	NA	NA
blank	TIC:						
	Hexanoic Acid	142-62-1	JN	77.00	NA	NA	NA
	Hexadecanoic Acid	57-10-3	JN	180.0	NA	NA	NA
	2-methoxy-2-propoxy propane		J	2100.0	NA	NA	NA

µg/kg = microgram/kilogram (parts per billion)

NA = not available

J = Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate, by the laboratory because it is below the method detection limit.

JN = Tentatively identified compounds (TICs) were reported in the samples and deemed estimated and presumptive

BJ = For organic data, indicates that the compound was detected in both the sample and the associated method blank. The associated concentration is estimated.

[a] = Chemical Abstract Services

[b] = Calculation found in Model Toxic Control Act (173-340-740)

Note: MTCA, Method B, use the lowest of the two cleanup levels, cancer or noncancer-based, for implementation in closure plans.

Table 3. 218 E-8 Borrow Pit Demolition Site Soil Results, General Chemistry Analysis.
(sheet 1 of 2)

Sample number	Name of Constituent	Qualifiers	Concentration mg/kg	MTCA Method B Cleanup Levels[a] mg/kg	Hanford Site Soil Background 95/95 threshold[b] mg/kg	Hanford Site Soil Background Maximum Conc.[b] mg/kg
B0C961	Fluoride		0.70	4800.0	13.00	73.30
	Chloride	J	0.90	NA	783.0	1480.0
	Phosphate	J	1.60	NA	12.70	225.0
	Sulfate		2.50	NA	931.0	12600.0
	Nitrate+Nitrite		0.81	130000+8000=138000	208.0*	906.0*
B0C962 Duplicate	Fluoride		0.80	4800.0	13.00	73.30
	Chloride	J	0.90	NA	783.0	1480.0
	Phosphate	J	1.40	NA	12.70	225.0
	Sulfate		2.50	NA	931.0	12600.0
	Nitrate+Nitrite		0.72	130000+8000=138000	208.0*	906.0*
B0C963	Fluoride		0.80	4800.0	13.00	73.30
	Chloride	J	2.00	NA	783.0	1480.0
	Phosphate	J	2.50	NA	12.70	225.0
	Sulfate		4.50	NA	931.0	12600.0
	Nitrate+Nitrite		4.60	130000+8000=138000	208.0*	906.0*
B0C964 equip blank	Fluoride	U	0.40	4800.0	13.00	73.30
	Chloride	J	2.20	NA	783.0	1480.0
	Phosphate	UR	1.00	NA	12.70	225.0
	Sulfate		2.90	NA	931.0	12600.0
	Nitrate+Nitrite		0.88	130000+8000=138000	208.0*	906.0*
B0C965	Fluoride		0.60	4800.0	13.00	73.30
	Chloride	J	1.40	NA	783.0	1480.0
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	Sulfate		3.30	NA	931.0	12600.0
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	Nitrate+Nitrite		1.40	130000+8000=138000	208.0*	906.0*
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	Chloride	J	1.00	NA	783.0	1480.0
	Phosphate	J	1.80	NA	12.70	225.0
	Sulfate		3.30	NA	931.0	12600.0
	Nitrate+Nitrite		2.60	130000+8000=138000	208.0*	906.0*

Table 3. 218 E-8 Borrow Pit Demolition Site Soil Results, General Chemistry Analysis.
(sheet 1 of 2)

Sample number	Name of Constituent	Qualifiers	Concentration mg/kg	MTCA Method B Cleanup Levels[a] mg/kg	Hanford Site Soil Background 95/95 threshold[b] mg/kg	Hanford Site Soil Background Maximum Conc.[b] mg/kg
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	Phosphate	J	1.80	NA	12.70	225.0
	Sulfate		3.30	NA	931.0	12600.0
	Nitrate+Nitrite		2.60	130000+8000=138000	208.0*	906.0*

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